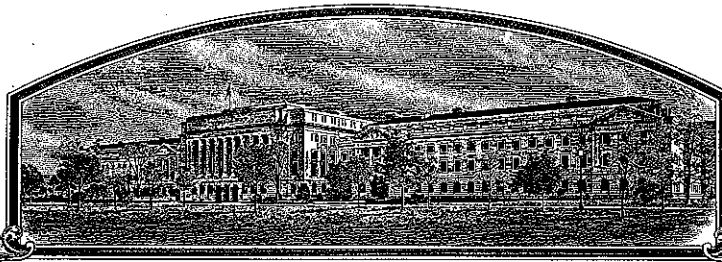


No.

200000334



# THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

*Shamrock Seed Company, Inc.*

Whereas, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED DISTINCT VARIETY OF SEXUALLY REPRODUCED, OR TUBER PROPAGATED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF TWENTY YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, OR PROPAGATING IT, OR EXPORTING IT, OR CONDITIONING IT FOR PROPAGATION, OR STOCKING IT FOR ANY OF THE ABOVE PURPOSES, OR CONDITIONING IT FOR PROPAGATION, OR STOCKING IT FOR ANY OF THE ABOVE PURPOSES, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED IN THE PLANT VARIETY PROTECTION ACT. (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

LETTUCE

'Anthem'

*In Testimony Whereof, I have hereunto set my hand and caused the seal of the Plant Variety Protection Office to be affixed at the City of Washington, D.C. this twenty-fifth day of August, in the year two thousand and five.*

Attest:

*[Signature]*

Commissioner  
Plant Variety Protection Office  
Agricultural Marketing Service

*[Signature]*  
Secretary of Agriculture

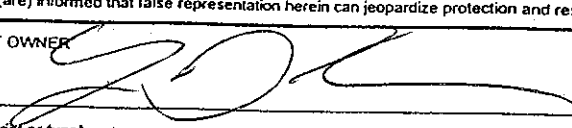


U.S. DEPARTMENT OF AGRICULTURE  
AGRICULTURAL MARKETING SERVICE  
SCIENCE AND TECHNOLOGY - PLANT VARIETY PROTECTION OFFICE

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE  
(Instructions and information collection burden statement on reverse)

The following statements are made in accordance with the Privacy Act of 1974 (5 U.S.C. 552a) and the Paperwork Reduction Act (PRA) of 1995.

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

1. NAME OF OWNER <b>Shamrock Seed Company, Inc.</b>		2. TEMPORARY DESIGNATION OR EXPERIMENTAL NAME <b>SSC 30398</b>	3. VARIETY NAME <b>Anthem</b> cleared 9/22/99
4. ADDRESS (Street and No., or R.F.D. No., City, State, and ZIP Code, and Country) <b>3 Harris Place Salinas, CA 93901 USA</b>		5. TELEPHONE (include area code) <b>831-771-1500</b>	FOR OFFICIAL USE ONLY PVPO NUMBER <b>200000334</b>
		6. FAX (include area code) <b>831-771-1517</b>	
7. IF THE OWNER NAMED IS NOT A "PERSON", GIVE FORM OF ORGANIZATION (corporation, partnership, association, etc.) <b>Corporation</b>	8. IF INCORPORATED, GIVE STATE OF INCORPORATION <b>CA</b>	9. DATE OF INCORPORATION <b>Jan 1984</b>	FILING DATE <b>Sept. 1, 2000</b>
10. NAME AND ADDRESS OF OWNER REPRESENTATIVE(S) TO SERVE IN THIS APPLICATION. (First person listed will receive all papers) <b>Larry D. Knerr, Ph.D Shamrock Seed Company, Inc. 3 Harris Place Salinas, CA 93901 USA</b>			FILING AND EXAMINATION FEES: F E E S R E C E I V E D <b>\$ 2,705.00</b> DATE <b>9/11/2000</b> CERTIFICATION FEE: <b>\$ 682.00</b> DATE <b>7/26/05</b>
11. TELEPHONE (include area code) <b>831-771-1500</b>	12. FAX (include area code) <b>831-771-1517</b>	13. E_MAIL <b>lknerr@shamrockseed.com</b>	14. CROP KIND (Common Name) <b>Lettuce</b>
15. GENUS AND SPECIES NAME OF CROP <b>Lactuca sativa</b>		16. FAMILY NAME (Botanical) <b>Asteraceae</b>	17. IS THE VARIETY A FIRST GENERATION HYBRID? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO
18. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED (Follow instructions on reverse) a. <input checked="" type="checkbox"/> Exhibit A. Origin and Breeding History of the Variety b. <input checked="" type="checkbox"/> Exhibit B. Statement of Distinctness c. <input checked="" type="checkbox"/> Exhibit C. Objective Description of Variety d. <input type="checkbox"/> Exhibit D. Additional Description of the Variety (Optional) e. <input checked="" type="checkbox"/> Exhibit E. Statement of the Basis of the Owner's Ownership f. <input checked="" type="checkbox"/> Voucher Sample (2,500 viable untreated seeds or, for tuber propagated varieties, verification that tissue culture will be deposited and maintained in an approved public repository) g. <input checked="" type="checkbox"/> Filing and Examination Fee (\$2,450), made payable to "Treasurer of the United States" (Mail to the Plant Variety Protection Office)		19. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE SOLD AS A CLASS OF CERTIFIED SEED? See Section 83(a) of the Plant Variety Protection Act <input type="checkbox"/> YES (If "yes", answer items 20 and 21 below) <input checked="" type="checkbox"/> NO (If "no," go to item 22)	
22. HAS THE VARIETY (INCLUDING ANY HARVESTED MATERIAL) OR A HYBRID PRODUCED FROM THIS VARIETY BEEN SOLD, DISPOSED OF, TRANSFERRED, OR USED IN THE U. S. OR OTHER COUNTRIES? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO IF YES, YOU MUST PROVIDE THE DATE OF FIRST SALE, DISPOSITION, TRANSFER, OR USE FOR EACH COUNTRY AND THE CIRCUMSTANCES. (Please use space indicated on reverse.)		20. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS? <input type="checkbox"/> YES <input type="checkbox"/> NO	
		21. IF "YES" TO ITEM 20, WHICH CLASSES OF PRODUCTION BEYOND BREEDER SEED? <input type="checkbox"/> FOUNDATION <input type="checkbox"/> REGISTERED <input type="checkbox"/> CERTIFIED	
23. IS THE VARIETY OR ANY COMPONENT OF THE VARIETY PROTECTED BY INTELLECTUAL PROPERTY RIGHT (PLANT BREEDER'S RIGHT OR PATENT)? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO IF YES, PLEASE GIVE COUNTRY, DATE OF FILING OR ISSUANCE AND ASSIGNED REFERENCE NUMBER. (Please use space indicated on reverse.)		24. The owners declare that a viable sample of basic seed of the variety will be furnished with application and will be replenished upon request in accordance with such regulations as may be applicable, or for a tuber propagated variety a tissue culture will be deposited in a public repository and maintained for the duration of the certificate. The undersigned owner(s) is(are) the owner of this sexually reproduced or tuber propagated plant variety, and believe(s) that the variety is new, distinct, uniform, and stable as required in Section 42. Owner(s) is(are) informed that false representation herein can jeopardize protection and result in penalties.	
SIGNATURE OF OWNER 		SIGNATURE OF OWNER	
NAME (Please print or type) <b>Larry D. Knerr</b>		NAME (Please print or type)	
CAPACITY OR TITLE <b>Research Director</b>	DATE <b>8/29/00</b>	CAPACITY OR TITLE	DATE

## INSTRUCTIONS

200000334

**GENERAL:** To be effectively filed with the Plant Variety Protection Office (PVPO), ALL of the following items must be received in the PVPO: (1) Completed application form signed by the owner; (2) completed exhibits A, B, C, E; (3) for a seed reproduced variety at least 2,500 viable untreated seeds, for a hybrid variety at least 2,500 untreated seeds of each line necessary to reproduce the variety, or for tuber reproduced varieties verification that a viable (in the sense that it will reproduce an entire plant) tissue culture will be deposited and maintained in an approved public repository; (4) check drawn on a U.S. bank for \$2,450 (\$300 filing fee and \$2,150 examination fee), payable to "Treasurer of the United States" (See Section 97.6 of the Regulations and Rules of Practice.) Partial applications will be held in the PVPO for not more than 90 days, then returned to the applicant as unfilled. Mail application and other requirements to Plant Variety Protection Office, AMS, USDA, Room 500, NAL Building, 10301 Baltimore Avenue, Beltsville, MD 20705-2351. Retain one copy for your files. All items on the face of the application are self explanatory unless noted below. Corrections on the application form and exhibits must be initialed and dated. DO NOT use masking materials to make corrections. If a certificate is allowed, you will be requested to send a check payable to "Treasurer of the United States" in the amount of \$300 for issuance of the certificate. Certificates will be issued to owner, not licensee or agent.

Plant Variety Protection Office

Telephone: (301) 504-5518

FAX: (301) 504-5291

Homepage: <http://www.ams.usda.gov/science/pvp.htm>

## ITEM

- 18a. Give:
- (1) the genealogy, including public and commercial varieties, lines, or clones used, and the breeding method;
  - (2) the details of subsequent stages of selection and multiplication;
  - (3) evidence of uniformity and stability; and
  - (4) the type and frequency of variants during reproduction and multiplication and state how these variants may be identified
- 18b. Give a summary of the variety's distinctness. Clearly state how this application variety may be distinguished from all other varieties in the same crop. If the new variety is most similar to one variety or a group of related varieties:
- (1) identify these varieties and state all differences objectively;
  - (2) attach statistical data for characters expressed numerically and demonstrate that these are clear differences; and
  - (3) submit, if helpful, seed and plant specimens or photographs (prints) of seed and plant comparisons which clearly indicate distinctness
- 18c. Exhibit C forms are available from the PVPO Office for most crops; specify crop kind. Fill in Exhibit C (Objective Description of Variety) form as completely as possible to describe your variety
- 18d. Optional additional characteristics and/or photographs. Describe any additional characteristics that cannot be accurately conveyed in Exhibit C. Use comparative varieties as is necessary to reveal more accurately the characteristics that are difficult to describe, such as plant habit, plant color, disease resistance, etc.
- 18e. Section 52(5) of the Act requires applicants to furnish a statement of the basis of the applicant's ownership. An Exhibit E form is available from the PVPO.
19. If "Yes" is specified (seed of this variety be sold by variety name only, as a class of certified seed), the applicant MAY NOT reverse this affirmative decision after the variety has been sold and so labeled, the decision published, or the certificate issued. However, if "No" has been specified, the applicant may change the choice. (See Regulations and Rules of Practice, Section 97.103).
22. See Sections 41, 42, and 43 of the Act and Section 97.5 of the regulations for eligibility requirements.
23. See Section 5.5 of the Act for instructions on claiming the benefit of an earlier filing date.

**22. CONTINUED FROM FRONT** (Please provide the date of first sale, disposition, transfer, or use for each country and the circumstances, if the variety (including any harvested material) or a hybrid produced from this variety has been sold, disposed of, transferred, or used in the U.S. or other countries.)

Date of first sale in the United States: 9/15/99

Tried, but not sold, in England, Italy, and France 6/00 - 7/00

**23. CONTINUED FROM FRONT** (Please give the country, date of filing or issuance, and assigned reference number, if the variety or any component of the variety is protected by intellectual property right (Plant Breeder's Right or Patent).)

**NOTES:** It is the responsibility of the applicant/owner to keep the PVPO informed of any changes of address or change of ownership or assignment or owner's representative during the life of the application/certificate. There is no charge for filing a change of address. The fee for filing a change of ownership or assignment or any modification of owner's name is specified in Section 97.175 of the regulations. (See Section 101 of the Act, and Sections 97.130, 97.131, 97.175(h) of the Regulations and Rules of Practice.)

To avoid conflict with other variety names in use, the applicant must check the variety names proposed by contacting: Seed Branch, AMS, USDA, Room 213, Building 306, Beltsville Agricultural Research Center-East, Beltsville, MD 20705. Telephone: (301) 504-8089.

Public reporting burden for this collection of information is estimated to average 30 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Department of Agriculture, Clearance Officer, OIRM, AG Box 7630, Jamie L. Whitten Building, Washington, D.C. 20250. When replying, refer to OMB No. 0581-0055 and form number in your letter. Under the PRA of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number. The U.S. Department of Agriculture (USDA) prohibits discrimination in its programs on the basis of race, color, national origin, sex, religion, age, disability, political beliefs, and marital or familial status. (Not all prohibitions apply to all programs). Persons with disabilities who require alternative means for communication of program information (braille, large print, audiotape, etc.) should contact the USDA Office of Communications at (202) 720-2791. To file a complaint, write the Secretary of Agriculture, U.S. Department of Agriculture, Washington, D.C. 20250, or call (202) 720-7327 (voice) or (202) 720-1127 (TDD). USDA is an equal opportunity employer.

ST-470 (6-98) designed by the Plant Variety Protection Office with WordPerfect 6.0a. Replaces STD-470 (03-96) which is obsolete

PVP Application, Butterhead Lettuce (*Lactuca sativa*) 'Anthem'

EXHIBIT A

Origin and Breeding History of the Variety

Anthem was developed from an original cross, made in 1992. The female parent in this cross is the variety 'Olivier'. The male parent in this cross is an F<sub>4</sub> line developed from a cross of the varieties 'Cortina' and 'Dabora'. Through pedigree selection and screening for resistance to *Bremia lactucae* (downy mildew), a stable and uniform F<sub>7</sub> line with downy mildew resistance was selected in 1998 that was used as stock seed to produce 'Anthem'. Numerous trials conducted in Salinas, CA and Yuma, AZ in 1998 and 1999 have revealed no variants in this variety. The pedigree, using notation adhered to by Shamrock Seed Company, for 'Anthem' is noted below.

[Olivier x (Cortina x Dabora)-A1A]-A1A2E1

PVP Application, Butterhead Lettuce (*Lactuca sativa*) 'Anthem'

## EXHIBIT B

## Statement of Distinctness

'Anthem' ~~most~~ closely resembles the variety 'Allegiance', also being submitted by Shamrock Seed Company for Plant Variety Protection. 'Anthem' was developed from the same cross as 'Allegiance'. The two varieties diverged at the F<sub>4</sub> generation. The *Pre-existing* non-Shamrock Seed Company variety that 'Anthem' most closely resembles is 'Margarita'. The following table demonstrates the differences among these varieties:

MAH  
6-28-05

Variety	Days to Maturity*	Color at Maturity**	Weight at Maturity***	Bremia resistance
Anthem	47-53	143A	261-265 g	CA I, IIA, IIB, III, IV, V, VI
Allegiance	47-53	143B	243-250 g	CA I, IIA, IIB, III, IV, V, VI
Margarita	51-56	143C	195-205 g	CAI, IIA, III, IV

\*see attachment

\*\*As determined by RHS color chart.

\*\*\*see attachment



3 Harris Place  
Salinas, California 93901-4586  
Office: 831/771-1500  
Fax: 831/771-1517  
Voice Mail: 831/771-1515

December 14, 2004

James R. Mantooth, Associate Plant Variety Examiner  
Plant Variety Protection Office  
NAL Building, Room 401  
10301 Baltimore Blvd.  
Beltsville, MD 20705-2351

SUBJECT: Application No. 200000334, Lettuce, 'Anthem'

Dear Mr. Mantooth,

Thank you for your response regarding our PVP application for the lettuce variety 'Anthem'. I have addressed your questions regarding, *Bremia resistance claims*, *Days to Maturity*, and *Supportive data / statistics* in the following sections:

***Bremia resistance claims:***

Based on Anthem's pedigree, the possible *Bremia* genes present are *Dm11* from the variety 'Cortina' and *Dm18* from the variety 'Dabora'. The *Dm11* gene confers resistance to California *Bremia* isolates CAI, III, and IV. The *Dm18* gene confers resistance to California *Bremia* isolates CAI, IIA, IIB, III, IV, and V.

Anthem, Allegiance, and Margarita were tested for their reaction to California *Bremia* isolates CA IIA, IIB, III, and V by STA Laboratories, Gilroy, CA beginning 6/14/99 with results reported on 7/28/99. Isolates CAI and IV were not used in the test as CAI was no longer available and CAIV was not available at that time (CAIV is still unavailable and has not been detected in nature for over 2 years). Additionally, all *Dm* genes which confer resistance to CAIII also confer resistance to CAIV. When released, Margarita was advertised as being resistant to CA *Bremia* isolates CAI, IIA, and III (CAIV had not been named at this time, but we now know that Margarita is resistant to CAIV since all *Dm* genes which confer resistance to CAIII also confer resistance to CAIV), which could only be conferred by the combination of the *Dm1* and *Dm11* genes.

The key *Bremia* isolates in this test were CAIIB and CAV. Resistance to these isolates would indicate the presence of the *Dm18* gene in Anthem and Allegiance, and its absence in Margarita. Resistance to isolates I and IV can be inferred due to published reactions of the California *Bremia* isolates to the known *Dm* genes. Additionally, in 2003 California *Bremia* isolate CAVI was named. Gene *Dm18* confers resistance to this isolate, but genes *Dm1* and *Dm11* do not.

Using these isolates, we can determine the presence or absence of the *Dm1* gene in 'Margarita' and the presence or absence of the *Dm18* gene in 'Anthem' and 'Allegiance'. However, we cannot determine the presence or absence of the *Dm11* gene in 'Margarita' because the isolate CAI is no longer available. We cannot determine the presence or absence of the *Dm11* gene in 'Anthem' and 'Allegiance' if they possess the *Dm18* gene. The *Dm18* gene would mask the *Dm11* gene if only using the California *Bremia* isolates. We can, however, test for the presence or absence of the *Dm11* gene in 'Anthem' and 'Allegiance' using *Bremia* isolates from Europe. The *Dm11* gene confers resistance to the European *Bremia* isolate BL17, but the *Dm18* gene does not.

Subsequent to the filing of the original application, 'Anthem' and 'Allegiance' were tested by NAKTuinbouw, Roelofarendsveen, The Netherlands, using European isolates BL2, 3, 5, 16, and 17, in November of 2000 and were determined to be resistant to all 5 isolates. Resistance to BL17 indicates that they do carry the *Dm11* gene in addition to the *Dm18* gene. Additionally, Margarita was included in this test as resistance to BL5 is conferred by *Dm11*, but not *Dm1*. This allowed us to confirm the presence of *Dm11* in 'Margarita'.

Bremia Test, STA Laboratories, Gilroy, CA  
Start Date: 6/14/99; Report Date: 7/28/99

Variety:	Anthem (record 6)	Allegiance (record 11)	Margarita (record 5)
CA Isolate			
IIA	0/31*	0/31	0/27
IIB	0/30	0/30	30/0
III	0/31	0/29	0/27
V	0/28	0/22	31/0

\*# of Susceptible plants/# of Resistant plants

Bremia Test, NAKTuinbouw, Roelofarendsveen, The Netherlands  
Start Date: 11/27/00; Report Date: 4/6/01

Variety:	Anthem (record 30)	Allegiance (record 31)	Margarita (record 19)
European Isolate			
2	0/60*	0/56	0/60
3	0/54	0/55	0/60
5	0/60	0/60	0/60
16	0/60	0/60	60/0
17	0/60	0/43	0/60

\*# of Susceptible plants/# of Resistant plants

Using the results of published reactions between *Bremia* isolates and Dm genes, the results of *Bremia* testing, and the pedigree information as outlined above, we determined the following regarding *Bremia* resistance of these three varieties.

Variety	Resistance Genes	Resistance to <i>Bremia</i> isolates
Anthem	Dm11, Dm18	CAI, IIA, IIB, III, IV, V, and VI
Allegiance	Dm11, Dm18	CAI, IIA, IIB, III, IV, V, and VI
Margarita	Dm1, Dm11	CAI, IIA, III, IV

***Days to Maturity:***

I have changed the days to maturity to indicate a range from the three trials used in the comparison. The exact number of days to maturity for each trial is indicated in the attachment to 'EXHIBIT B' along with the statistical analyses. No statistical analysis was conducted on days to maturity due to there only being one measurement per trial.

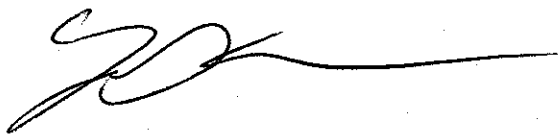
***Supportive data / statistics:***

I have removed the pooled data from 'EXHIBIT B' and only included the analyses from each individual trial. There is data from three individual trials and, I believe, your points 1-7 in this section have been addressed in the revised 'EXHIBIT B' and its attachment.

As a result of your questions, I have attached an updated/corrected 'EXHIBIT B' for this application.

Please let me know if this letter and attachment fully answers your questions, or if I need to provide any additional information.

Best regards,



Larry D. Knerr, Ph.D.  
Research Director

Pc: File



PVP Application, Butterhead Lettuce (*Lactuca sativa*) 'Anthem'

## EXHIBIT B, Attachment

## Statement of Distinctness

## Head Weight at Maturity (grams)

## Trial 1

Location: Salinas, CA

Planting Date: 7/27/98

Harvest/Comparison dates: 9/18/98, Anthem and Allegiance, 52 days to maturity; 9/22/98, Margarita, 56 days to maturity

Number of plants used per variety = 50; Sample size = 20

Variety	N	Mean	Standard Deviation
Anthem	20	260.8	14.61
Allegiance	20	243.4	13.68
Margarita	20	195.2	15.02
LSD (0.05)		8.9	

## Trial 2

Location: Salinas, CA

Planting Date: 7/29/99

Harvest/Comparison dates: 9/19/99, Anthem and Allegiance, 53 days to maturity; 9/22/99, Margarita, 56 days to maturity

Number of plants used per variety = 50; Sample size = 20

Variety	N	Mean	Standard Deviation
Anthem	20	264.1	16.18
Allegiance	20	250.2	13.74
Margarita	20	199.8	18.97
LSD (0.05)		10.1	

## Trial 3

Location: Salinas, CA

Planting Date: 7/1/00

Harvest/Comparison dates: 8/16/00, Anthem and Allegiance, 47 days to maturity; 8/20/00, Margarita, 51 days to maturity

Number of plants used per variety = 50; Sample size = 20

Variety	N	Mean	Standard Deviation
Anthem	20	264.6	14.91
Allegiance	20	251.5	11.35
Margarita	20	205.4	17.52
LSD (0.05)		9.1	

PVP Application, Butterhead Lettuce (*Lactuca sativa*) 'Anthem'

## EXHIBIT B, Attachment

## Statement of Distinctness

## Raw Data, Mature Head Weight (grams)

## Anthem

1998	259,239,249,278,254,267,244,263,249,276,255,249,247,295,279,274,269,262,264,244
1999	278,260,254,270,249,239,244,288,239,255,274,259,280,269,254,264,295,280,252,279
2000	244,270,255,275,246,277,254,265,266,280,254,243,287,246,290,266,264,288,267,255

## Allegiance

1998	227,261,255,238,222,243,233,229,253,267,240,251,229,239,236,262,238,241,236,268
1999	255,271,231,266,249,244,253,228,247,255,259,252,233,249,236,266,241,274,263,233
2000	266,241,260,244,237,266,247,238,261,241,259,272,257,254,249,261,231,255,251,240

## Margarita

1998	202,187,179,186,198,203,193,195,194,175,214,209,206,210,193,199,211,208,152,200
1999	166,200,188,159,199,168,203,211,197,211,208,190,214,215,197,231,208,191,226,214
2000	240,212,186,203,204,213,190,214,221,197,214,202,213,208,169,201,170,214,205,232

U.S. DEPARTMENT OF AGRICULTURE  
AGRICULTURAL MARKETING SERVICE  
**SCIENCE DIVISION**  
**OBJECTIVE DESCRIPTION OF VARIETY**  
**LETTUCE *Lactuca sativa***

EXHIBIT

<b>NAME OF APPLICANT (S)</b> Shamrock Seed Company, Inc. <b>ADDRESS (Street and No. or R.F.D. No., City, State, and ZIP Code)</b> 3 Harris Place Salinas, CA 93901 USA	<b>FOR OFFICIAL USE ONLY</b> <b>VPPO NUMBER</b> <div style="font-size: 1.5em; font-weight: bold;">200000334</div> <b>VARIETY NAME</b> Anthem <b>EXPERIMENTAL DESIGNATION</b> SSC 30380
---	---

Place numbers in the boxes for the characters which best describe this variety. Measured data should be the mean of an appropriate number (at least 10) of well spaced plants. Royal Horticultural Society or any recognized color standard may be used to determine plant colors.

<b>The location of the test area is:</b> Gilroy, CA	<b>Color System Used:</b> RHS
--	----------------------------------

**1. PLANT TYPE:** (See list of suggested check varieties page 4.)

0	2	01=Cutting/Leaf 02=Butterhead 03=Bibb 04=Cos or Romaine	05=Great Lakes Group 06=Vanguard Group 07=Imperial Group 08=Eastern (Ithaca) Group	09=Stem 10=Latin 11=OTHER
---	---	--	---	---------------------------------

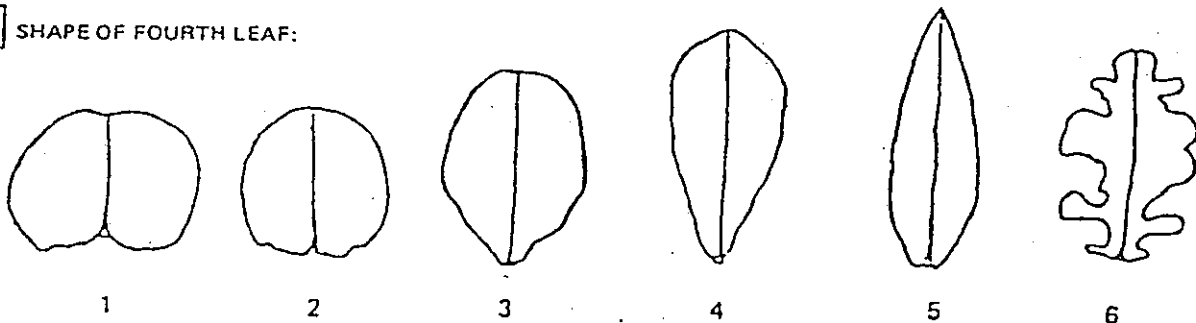
**2. SEED:**

<b>COLOR</b> 1=White (Silver Gray) 2=Black (Gray Brown) 3=Brown (Amber)	2	<b>LIGHT DORMANCY</b> 1=Light Required 2=Light Not Required	2	<b>HEAT DORMANCY</b> 1=Susceptible 2=Not Susceptible
--	---	---	---	--

**3. COTYLEDON TO FOURTH LEAF STAGE:** NOTE: Provide a color photograph or photocopy of the fourth leaf from 20 day old seedling grown under optimal conditions.

2 **SHAPE OF COTYLEDONS:** 1=Broad 2=Intermediate 3=Spatulate

4 **SHAPE OF FOURTH LEAF:**



17 **LENGTH/WIDTH INDEX OF FOURTH LEAF: LW x 10**

1	APICAL MARGIN:	1=Entire 2=Crenate/Gnawed 3=Finely Dentate	4=Moderately Dentate 5=Coarsely Dentate 6=Incised	7=Lobed 8=OTHER (specify)
2	BASAL MARGIN:			
1	UNDULATION:	1=Flat	2=Slight	3=Medium 4=Marked
3	GREEN COLOR:	1=Yellow Green 2=Light Green	3=Medium Green 4=Dark Green	5=Blue Green 6=Silver Green 7=Gray Green
ANTHOCYANIN:				
1	DISTRIBUTION:	1=Absent 2=Margin Only	3=Spotted 4=Throughout	5=OTHER (specify)
-	CONCENTRATION:	1=Light	2=Moderate	3=Intense
1	ROLLING:	1=Absent	2=Present	
1	CUPPING:	1=Uncupped	2=Slight	3=Markedly
1	REFLEXING:	1=None	2=Apical Margin	3=Lateral Margins

4. MATURE LEAVES (observe harvest-mature outer leaves):

NOTE: Provide color photo of harvest-mature leaves which accurately shows color and margin characteristics.

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MARGIN:

1	INCISION DEPTH: (deepest penetration of the margin)	1=Absent/Shallow (Dark Green Boston)	2=Moderate (Vanguard)	3=Deep (Great Lakes 659)
1	INDENTATION: (finest divisions of the margin)	1=Entire (Dark Green Boston)	3=Deeply Dentate (Great Lakes 659)	5=OTHER (specify)
		2=Shallowly Dentate (Great Lakes 65)	4=Crenate (Vanguard)	
2	UNDULATION OF THE APICAL MARGIN:	1=Absent/Slight (Dark Green Boston)	2=Moderate (Vanguard)	3=Strong (Great Lakes 659)
3	GREEN COLOR: 143A	1=Very Light Green (Bibb)	3=Medium Green (Great Lakes)	5=Very Dark Green
		2=Light Green (Minetto)	4=Dark Green (Vanguard)	6=OTHER
	ANTHOCYANIN (grown at or below 10 C):			
1	DISTRIBUTION:	1=Absent	3=Spotted (Calif. Cream Butter)	5=OTHER (specify)
		2=Margin Only (Big Boston)	4=Throughout (Prize Head)	
1	CONCENTRATION:	1=Light (Iceberg)	2=Moderate (Prize Head)	3=Intense (Ruby)
2	SIZE:	1=Small	2=Medium	3=Large
2	GLOSSINESS:	1=Dull (Vanguard)	2=Moderate (Salinas)	3=Glossy (Great Lakes)
2	BLISTERING:	1=Absent/Slight (Salinas)	2=Moderate (Vanguard)	3=Strong (Prize Head)
3	LEAF THICKNESS:	1=Thin	2=Intermediate	3=Thick
1	TRICHOMES:	1=Absent (smooth)	2=Present (spiny)	

5. PLANT (at market stage. Choose a comparison variety appropriate for this type.):

SPREAD OF FRAME LEAVES:

3 3 cm This Variety 3 0 cm Margarita (specify comparison variety)

HEAD DIAMETER (market trimmed with single cap leaf):

1 4 cm This Variety 1 2 cm Margarita (specify comparison variety)

3 HEAD SHAPE: 1=Flattened 3=Spherical 5=Non-Heading  
2=Slightly Flattened 4=Elongate 6=OTHER

1 HEAD SIZE CLASS: 1=Small 2=Medium 3=Large

2 4 HEAD COUNT PER CARTON

HEAD WEIGHT:

2 6 3 g This Variety 2 0 0 g Margarita (specify comparison variety)

1 HEAD FIRMNESS: 1=Loose 3=Firm  
2=Moderate 4=Very Firm

6. BUTT (bottom of market-trimmed head):

2 SHAPE: 1=Slightly Concave 2=Flat 3=Rounded

2 MIDRIB: 1=Flattened (Salinas) 2=Moderately Raised 3=Prominently Raised (Great Lakes 659)

7. CORE (stem of market-trimmed head):

2 5 mm Diameter at base of head

5 6 Ratio of head diameter/core diameter

Core height from base of head to apex:

4 0 mm This Variety 5 0 mm Margarita (specify comparison variety)

8. BOLTING (Give First Water Date 6/14/99):

NOTE: First Water Date is the date seed first receives adequate moisture to germinate. This can and often does equal the planting date.

Number of days from First Water Date to seed stalk emergence (summer conditions):

7 4 This Variety 7 4 Margarita (specify comparison variety)

1 BOLTING CLASS: 1=Very Slow 3=Medium 5=Very Rapid  
2=Slow 4=Rapid

Height of mature seed stalk:

6 7 cm This Variety 7 2 cm Margarita (specify comparison variety)

Spread of Bolter Plant (at widest point):  
 3 6 cm This Variety 3 3 cm Margarita (specify comparison variety)

2	BOLTER LEAVES:	1=Straight	2=Curved
2	MARGIN:	1=Entire	2=Dentate
1	COLOR:	1=Light Green	2=Medium Green 3=Dark Green
BOLTER HABIT:			
2	TERMINAL INFLORESCENCE:	1=Absent	2=Present
2	LATERAL SHOOTS: (above head)	1=Absent	2=Present
2	BASAL SIDE SHOOTS:	1=Absent	2=Present

9. MATURITY (earliness of harvest-mature head formation):

NOTE: Complete this section for at least one season.

SEASON	Applic. 1/ # of days	Check 1/ # of days	CHECK VARIETY 2/
Spring	7 8	8 1	Margarita
Summer	5 1	5 4	Margarita
Fall	5 4	5 8	Margarita
Winter	8 3	8 7	Margarita

Give planting date(s), and location(s):

Spring 2/25/99, 1/22/00 - Salinas, CA

Summer 7/27/98, 7/29/99, 7/1/00 - Salinas, CA; 6/14/99 - Gilroy, CA

Fall 9/30/99 - Yuma, AZ

Winter 10/29/99, 12/9/99, 12/31/99 - Yuma, AZ

1/ First water date to harvest.

2/ Fill in check variety name on the appropriate line.

10. ADAPTATION:

PRIMARY REGIONS OF ADAPTION (tested and proven adapted):

(0=Not tested

1=Not Adapted

2=Adapted)

2 Southwest (Calif., Ariz. desert) 2 West Coast 0 Northeast

0 Northcentral 0 Southeast 0 OTHER

SEASON:

2 Spring (area Salinas, CA)

2 Fall (area Yuma, AZ)

2 Summer (area Salinas, CA)

2 Winter (area Yuma, AZ)

0 GREENHOUSE: 0=Not tested 1=Not Adapted 2=Adapted

1 SOIL TYPE: 1=Mineral 2=Organic 3=Both

VIRUS

- ☐ 0 Big Vein  
☐ 0 Lettuce Mosaic  
☐ 0 Cucumber Mosaic  
☐ 0 Broad Bean Wilt  
☐ 0 Turnip Mosaic  
☐ 0 Beet Western Yellows  
☐ 0 Lett. Infectious Yellows  
☐ Other Virus \_\_\_\_\_

FUNGAL/BACTERIAL

- ☐ 1 Corky Root Rot (Pythium Root Rot)  
☐ 3 Downy Mildew (Races CAI, IIA, IIB, III, IV, V)  
☐ 0 Powdery Mildew  
☐ 0 Sclerotinia Rot  
☐ 0 Bacterial Soft Rot (Pseudomonas spp. & others)  
☐ 0 Botrytis (Gray Mold)  
☐ OTHER \_\_\_\_\_

INSECTS

- ☐ 0 Cabbage Loopers  
☐ 0 Root Aphids  
☐ 0 Green Peach Aphid  
☐ Other Insect \_\_\_\_\_

PHYSIOLOGICAL/STRESS

- ☐ 5 Tipburn  
☐ 5 Heat  
☐ 0 Drought  
☐ 0 Cold  
☐ 0 Salt  
☐ 0 Brown Rib (Rib Discoloration, Rib Blight)  
☐ OTHER \_\_\_\_\_

POST HARVEST

- ☐ 0 Pink Rib  
☐ 0 Russet Spotting  
☐ 0 Rusty Brown Discoloration  
☐ 0 Internal Rib Necrosis (Blackheart, Gray Rib, Gray Streak)  
☐ 0 Brown Stain

12. BIOCHEMICAL OR ELECTROPHORETIC MARKERS:

13. COMMENTS:

SUGGESTED CHECK VARIETIES

- TYPE  
 1) CUTTING/LEAF  
 2) BUTTERHEAD  
 3) BIBB  
 4) COS, OR ROMAINE  
 5) GREAT LAKES GROUP  
 6) VANGUARD GROUP  
 7) IMPERIAL GROUP  
 8) EASTERN GROUP  
 9) STEM  
 10) LATIN

- CHECK VARIETY  
 SALAD BOWL  
 DARK GREEN BOSTON  
 BIBB  
 PARRIS ISLAND  
 GREAT LAKES 659-700  
 VANGUARD  
 VIVA  
 ITHACA  
 CELTUCE  
 MATCHLESS

200000334



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ANTHEM



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U.S. DEPARTMENT OF AGRICULTURE  
AGRICULTURAL MARKETING SERVICE**EXHIBIT E**  
**STATEMENT OF THE BASIS OF OWNERSHIP***The following statements are made in accordance with the Privacy Act of 1974 (5 U.S.C. 552a) and the Paperwork Reduction Act (PRA) of 1995.**Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).*

1. NAME OF APPLICANT(S) Shamrock Seed Company, Inc.	2. TEMPORARY DESIGNATION OR EXPERIMENTAL NUMBER SSC 30380	3. VARIETY NAME Anthem cleared 9/22/99
4. ADDRESS (Street and No., or R.F.D. No., City, State, and ZIP, and Country) 3 Harris Place, Salinas, CA 93901 USA	5. TELEPHONE (include area code) 831-771-1500	6. FAX (include area code) 831-771-1517
7. PVPO NUMBER <b>200000334</b>		

8. Does the applicant own all rights to the variety? Mark an "X" in appropriate block. If no, please explain. ☒ YES ☐ NO9. Is the applicant (individual or company) a U.S. national or U.S. based company?  
If no, give name of country ☒ YES ☐ NO10. Is the applicant the original owner? ☒ YES ☐ NO If no, please answer one of the following:

a. If original rights to variety were owned by individual(s), is (are) the original owner(s) a U.S. national(s)?

☐ YES ☐ NO If no, give name of country

b. If original rights to variety were owned by a company(ies), is(are) the original owner(s) a U.S. based company?

☐ YES ☐ NO If no, give name of country

11. Additional explanation on ownership (if needed, use reverse for extra space):

**PLEASE NOTE:**

Plant variety protection can be afforded only to owners (not licensees) who meet one of the following criteria:

1. If the rights to the variety are owned by the original breeder, that person must be a U.S. national, national of a UPOV member country, or national of a country which affords similar protection to nationals of the U.S. for the same genus and species.
2. If the rights to the variety are owned by the company which employed the original breeder(s), the company must be U.S. based, owned by nationals of a UPOV member country, or owned by nationals of a country which affords similar protection to nationals of the U.S. for the same genus and species.
3. If the applicant is an owner who is not the original owner, both the original owner and the applicant must meet one of the above criteria.

The original breeder/owner may be the individual or company who directed final breeding. See Section 41(a)(2) of the Plant Variety Protection Act for definition.

According to the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0581-0055. The time required to complete this information collection is estimated to average 10 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

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